ATTACHMENT 1
SITE DESCRIPTION

1-1 GENERAL DESCRIPTION [40 CFR 270.14(b)(1); R315(b)(1)]

This Hazardous Waste Treatment Permit allows the treatment of chemical agent identification set (CAIS) items by the Rapid Response System located in Building 4553 of the Deseret Chemical Depot. The Rapid Response System consists of a mobile trailer with a glovebox system, consisting of the glovebox, the treatment reactor, the carbon filter system, the waste containerization system, and the agent identification instrumentation. CAIS items may contain chemical agent [mustard (H), distilled sulfur mustard (HD), bis(2-chloroethyl)ethylamine (HN-1), tris(2-chloroethyl)amine (HN-3), and lewisite (L)] and are currently stored in the Hazardous Waste Permitted Storage area at Area 10 at Deseret Chemical Depot. Treatment will be conducted in the neutralization station of the U.S. Army Rapid Response System glovebox. The generated treatment residues from the chemical oxidation operations will be further managed and disposed of offsite at an approved hazardous waste treatment, storage, and disposal facility (TSDF) provided that the chemical agent treatment goal of less than 50 parts per million (ppm) has been met.

Deseret Chemical Depot is located in the Rush Valley of Central Utah, approximately 25 miles south of the Great Salt Lake. Deseret Chemical Depot encompasses permitted hazardous waste management units (HWMUs) described in the existing RCRA Part B Storage Permit issued April 1, 1993. The Hazardous Waste Treatment Permit authorizes hazardous waste treatment operations that will eliminate CAIS in storage in containers within Area 10 of Deseret Chemical Depot. An area map of Deseret Chemical Depot is included in Attachment B-1 of the Permit Application. Site location maps are provided in Figures 1-1 and 1-2.

Hazardous wastes currently stored within Deseret Chemical Depot include:

a. Obsolete M55 rockets containing chemical agent, propellants, and explosives, declared as waste by the Army. The rockets are stored in 27 earth-covered igloos.

b. Waste associated with chemical ammunition maintenance or disposal activities, including spent carbon filters, scrap metal, spent decontamination solutions, spent solutions from air monitoring activities, incinerator ash, etc.

c. Waste generated from RCRA and Comprehensive Environmental Response, Compensation, and Liability Act corrective actions both on and off Deseret Chemical Depot, including recovered CAIS.

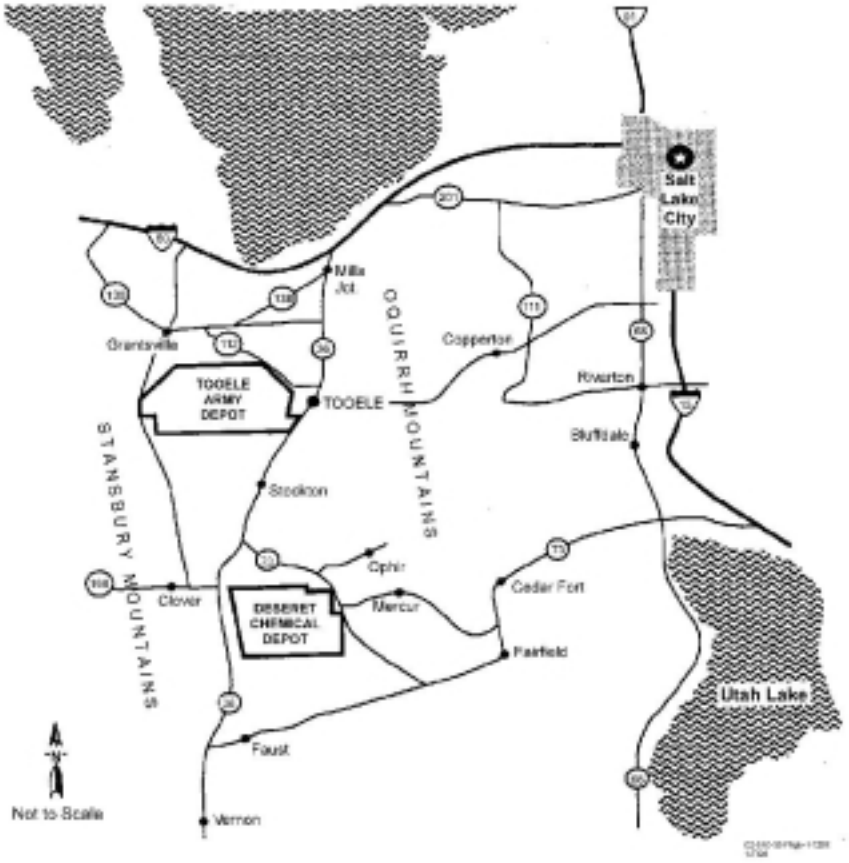

Figure 1-1
Location of Tooele Army Depot and Deseret Chemical Depot

Other activities ongoing at Deseret Chemical Depot include the demilitarization (destruction and disposal) of chemical agent munitions (including M55 rockets) and conventional munitions. The testing of demilitarization methods or chemical agent munitions takes place at the Chemical Agent Munitions Disposal System (CAMDS) facility. The CAMDS facility operations are covered in a separate Research, Development, and Demonstration permit. A production facility for the destruction of the stored chemical agents, known as the Tooele Chemical Agent Disposal Facility (TOCDF), is currently in operation and has received a RCRA Part B permit. The purpose of the TOCDF is to destroy the chemical agents and agent munitions currently stored at Deseret Chemical Depot. The demilitarization of conventional munitions is accomplished via open burning and open detonation (OB/OD). An application for a Part B permit (Subpart X) is under review. These activities are described in detail in their respective permitting documents.

The Rapid Response System will be operating inside Building 4553 while at Deseret Chemical Depot. Building 4553 was being used for reconfiguration of chemical munitions, in support of the chemical weapons stockpile disposal program. The reconfiguration operations will not be in progress during the Rapid Response System System Test. Building 4553 has 28,290 square feet of floor space and has been upgraded to meet safety, surety, and building criteria for handling chemical munitions reconfiguration.

While at Deseret Chemical Depot, the Rapid Response System will process all CAIS items currently in storage in Area 10. These items are included in the wastes discussed in paragraph "c" above. These wastes consist of chemical agents and industrial chemicals contained in glass ampules and bottles usually overpacked in steel cylinders, hereafter referred to as "PIGs."

A paved-road network is available to transport CAIS to Building 4553. Figure 1-2 shows the locations of Buildings 4553 and Area 10.

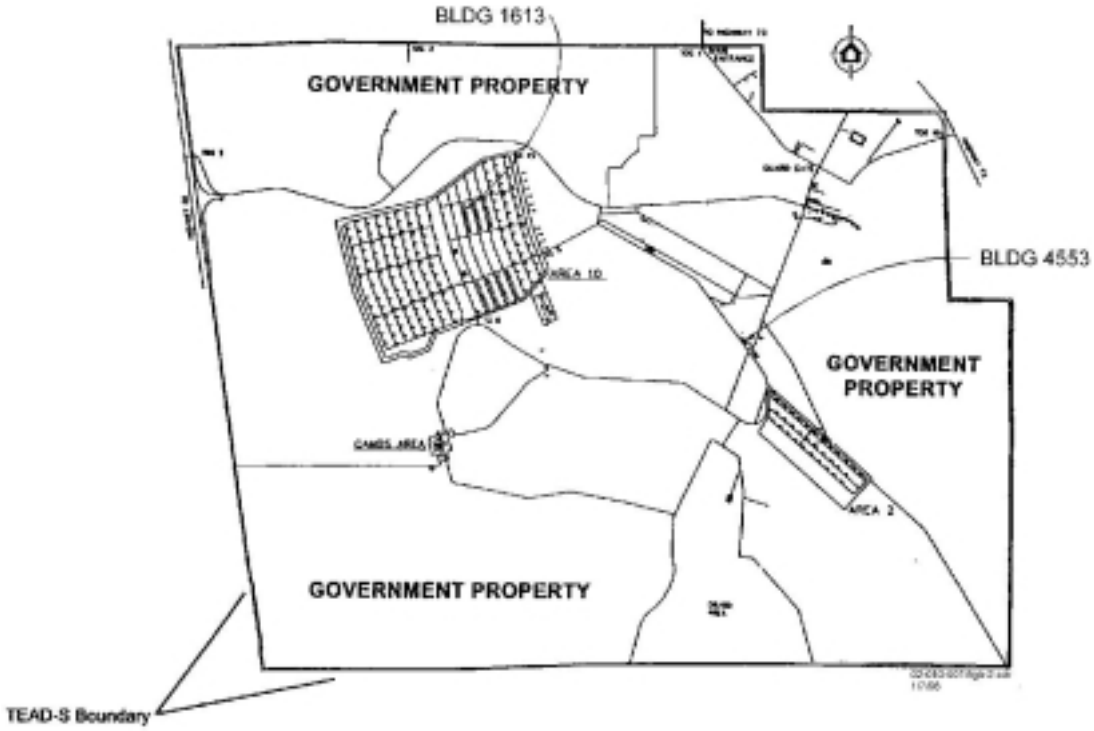

Figure 1-2
Location of Test Site Building 4553 Within the DCD Boundry

The operations trailer will be set up at the northwest end of the building. Figure 1-3 shows the layout of the Rapid Response System and support equipment within and around Building 4553. Data collection equipment unique to the test will be installed in Building 4553, and the treatment will be observed from that point. CAIS will be transported to the building in single-pallet-only rocket transporters (SPORTs), which are large, stainless steel boxes used to isolate chemical munitions. CAIS items will be stored in the vault at the northwest corner of the building. The operation of the Northwest Storage Vault is covered by the Hazardous Waste Storage Permit. The utility trailer is set up outside the northeast wall of the building. A Mobile Analytical Support Platform (MASP), necessary for onsite analytical chemistry support of the test, has been placed outside the northeast wall of the building. Other support equipment, such as the emergency personnel decontamination station (EPDS), required in the unlikely event of a spill outside engineering controls, will be established within Building 4553.

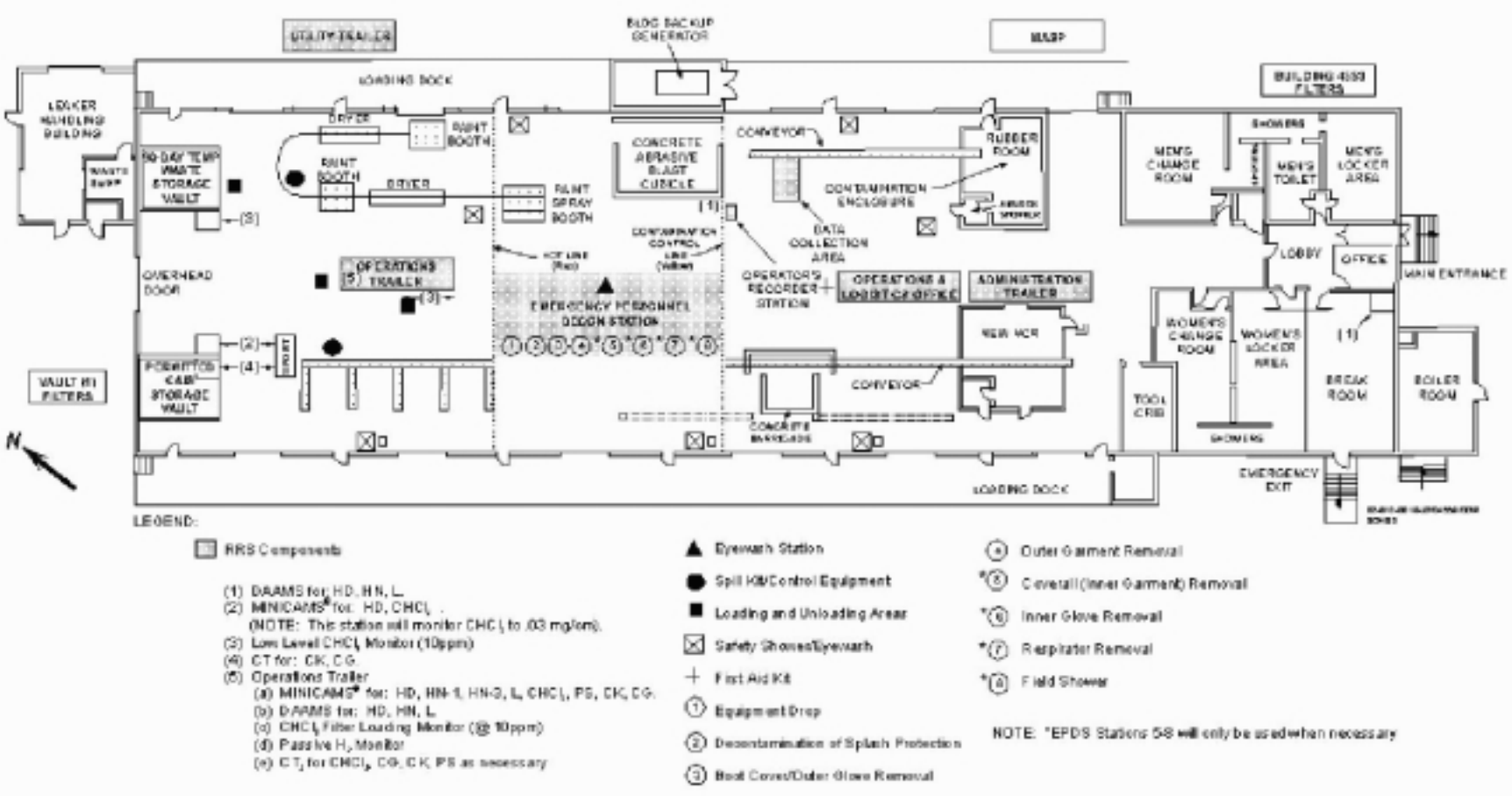

Figure 1-3
Location of Rapid Response System Trailers and Support Equipment

The vault located at the northeast corner of the building will be used for less than 90 day storage of process wastes and treatment residues. The wastes and treatment residues to be stored in this vault will be managed in accordance with the applicable standards in Utah Administrative Code R315-7-16, 40 CFR 262.34, and 40 CFR 265 Subparts I, BB and CC.. As an additional measure, secondary containment will be provided for drums containing free liquids.

The wastes generated as a result of the Rapid Response System operations will generally fall into three categories: treatment residues (neutralents and decontaminated dunnage/packing materials) from the chemical agent treatment processes, repackaged industrial chemicals, and drums containing uncontaminated CAIS packing materials and dunnage. The chemical agents and treatment residues are described in detail in Attachment 4.

The Rapid Response System will be composed of two primary trailers, designated as the operations trailer and the utility trailer, and ancillary equipment and administrative support trailers. The operations trailer will contain the glovebox system and all process equipment and instrumentation. The utility trailer will carry generators that enable the glovebox system to operate without commercial or host installation power when required.

Deseret Chemical Depot workers will deliver CAIS to the vault within Building 4553. The control of the CAIS items is transferred from Deseret Chemical Depot to the Rapid Response System operators when the CAIS items are relinquished by Deseret Chemical Depot personnel at the entrance to Building 4553. Rapid Response System operations begin with movement of CAIS from the storage vault within Building 4553 to the Rapid Response System: identification, segregation, treatment, repackaging, and management of the CAIS components; and packaging of the resulting waste products for transportation to an approved hazardous waste TSDF. Rapid Response System operations will integrate all systems and subsystems of the two Rapid Response System trailers, as well as the supporting equipment associated with the trailers. The CAIS items will be completely unpacked, the components containing chemical agents identified and treated, the components containing industrial chemical identified and repackaged, and the resulting treatment residues and materials prepared for shipment to an approved hazardous waste TSDF.

The treatment technique is chemical oxidation of chemical agents, residues of the chemical agent treatment process, and chemical agent-contaminated dunnage and packing materials. This treatment will take place in the glovebox neutralization station. In some circumstances, portions of the treatment process may also be accomplished within the unpack station or the waste drums installed in the waste containerization system under the unpack and neutralization stations. The major components of the glovebox system and key supporting systems are described below. The processes are described in more detail in Attachment 2.

Rapid Response System Glovebox. The glovebox (Figures 1-4 and 1-5) will be composed of three coupled stations under negative pressure [$\geq$ 1/4-inch water column].

- *Airlock Station.* The CAIS PIG will enter the glovebox through the airlock station. The airlock outer door will be closed and negative pressure restored in the airlock before operations continue.

- *Unpack Station.* The second station will be the unpack station. PIGs will be opened in the unpack station and the ampules and bottles will be removed. After the ampules and bottles are removed, they will be identified and segregated by content. Chemical agents to be treated will be placed into the storage racks within the glovebox. The industrial chemicals will be repackaged for transportation and further managed at an approved hazardous waste TSDF. Packing materials, including the PIG, will be placed in the solids drum installed in the waste containerization system under the unpack station. The PIG may be cut into pieces during the process. Packing materials contaminated with chemical agent may be decontaminated with treatment reagent or 5 percent sodium hypochlorite.

- *Neutralization Station.* Chemical agents will be treated after being separated and accumulated by agent and type of CAIS item. In the neutralization station, H; H, HN, and L adsorbed on charcoal; and HN, H, and L in chloroform solution will be accessed and treated with the appropriate treatment reagents in a nominal 1-gallon batch process reactor. The neutralent wastes (treatment residues) will be placed into a liquid hazardous waste drum installed in the waste containerization system under the neutralization station. The entire glovebox system will consist of the glovebox, the waste containerization system, and the carbon filter system at the end of the glovebox structure.

Carbon Filter System. Air will exit the glovebox through a carbon filter system. The carbon filter system will consist of the following filter elements:

- *Pre-filter Element:* This first filter element will be a medium-efficiency particulate pre-filter.

- *First High-Efficiency Particulate Air Filter Element:* The second filter element will be a high-efficiency particulate air (HEPA) filter.

- *Coconut Shell Carbon Filter Elements:* Each of the third and fourth filter elements will be an Ionex S99436-014 tray-type adsorber cell that contains granular, activated, coconut-shell-based carbon media. This filter element material was selected for chloroform removal.

- *ASZM-TEDA Carbon Filter Elements:* Each of the fifth and sixth filter elements will be an Ionex S99436-015 absorber cell that contains granular, steam-activated, bituminous coal carbon media impregnated with copper and silver salts. Each filter element will filter the gaseous vapors of the chemical agents HD, HN, and L, and the industrial chemicals CG, CK, and PS.

- *Second HEPA Filter Element:* The seventh and final filter element in the glovebox carbon filter system will consist of a second HEPA filter element. This second HEPA filter element will be positioned after the second whetlerized filter element to capture any carbon particles that may escape from carbon-filled filter elements.

Air will be drawn through the glovebox and filter unit by an inductive fan driven by a one horsepower electric motor.

Waste Containerization System. The waste containerization system will accept PIG pieces and packing materials from the unpack station and neutralents from the neutralization station. This system will consist of two independent, enclosed compartments. The unpack station compartment will be able to accept up to a 30-gallon open-head waste drum, and the neutralization station compartment will be able to accept up to a 30-gallon closed-head waste drum with a 2-inch bung. These drums will be located under the corresponding glovebox station and will be accessible from outside the trailer for installation and removal.

Raman Spectrophotometer System. All liquid filled glass containers that are not leaking will be analyzed by Raman spectroscopy. The Raman spectrophotometer identification system will nonintrusively identify chemical materiel found in CAIS ampules and bottles while they are in the unpack station. Laser energy will be used to excite the container contents, and the spectrophotometer instrumentation will produce a characteristic spectra from the light released from the laser-excited chemicals. The spectra will be interpreted to identify the container contents.

Air Monitoring System. The chemical materiel air monitoring system will ensure the safety of the workers and the general public by using two types of monitors: MINICAMS® and confirmation monitors (DAAMS and colorimetric tubes). Attachment 2 describes monitoring equipment in more detail.

The MINICAMS® is a miniature continuous air monitoring system that uses gas chromatography (GC) to detect airborne concentrations of chloroform, certain industrial chemicals, and chemical agents before the concentration reaches permissible exposure limits (PELs). Table 1-1 presents the PELs for the industrial chemicals and chemical agents to be processed in the Rapid Response System. MINICAMS® will be used for detection of chemical agents and industrial chemicals during operations associated with storage and maintenance of CAIS. A set of MINICAMS® will continuously monitor for the presence of chloroform, sulfur mustard (H and HD), nitrogen mustard (HN-1 and HN-3), lewisite (L), and the industrial chemicals cyanogen chloride (CK), phosgene (CG), and chloropicrin (PS).

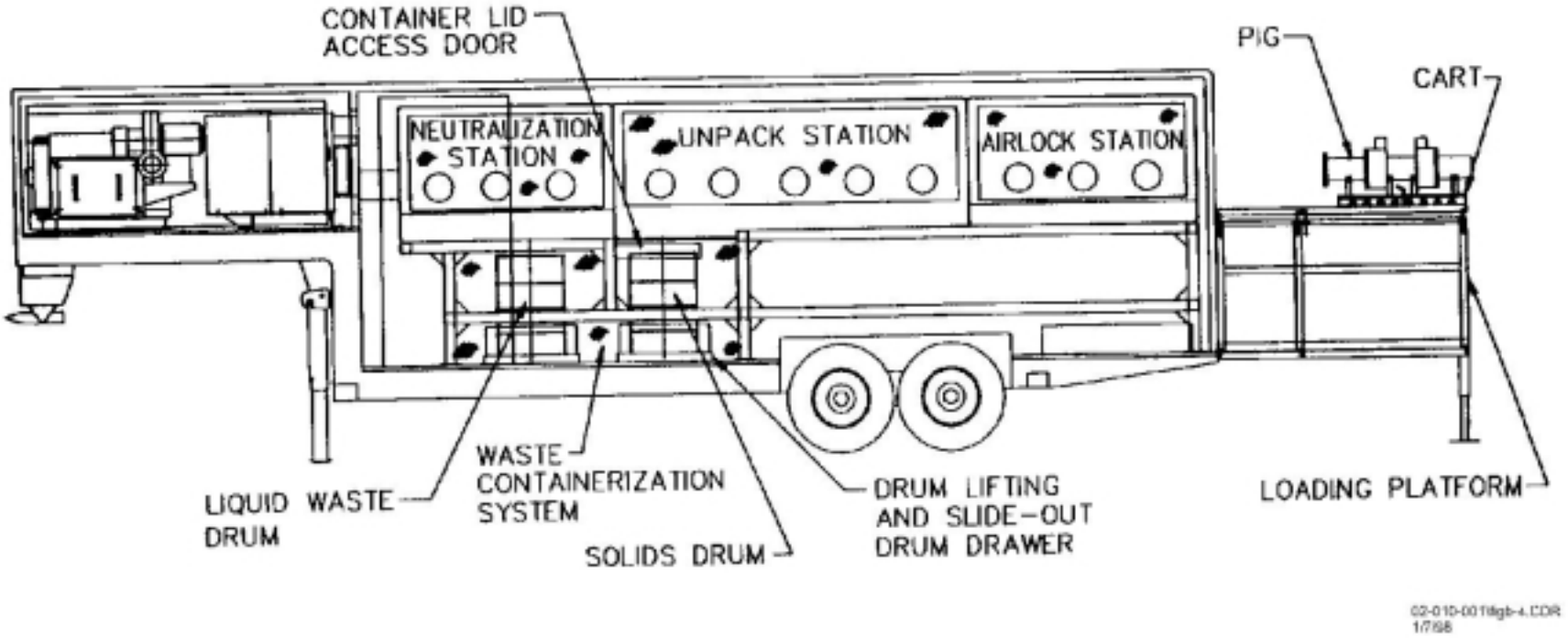

Figure 1-4
Side View of Rapid Response System Operations Trailer

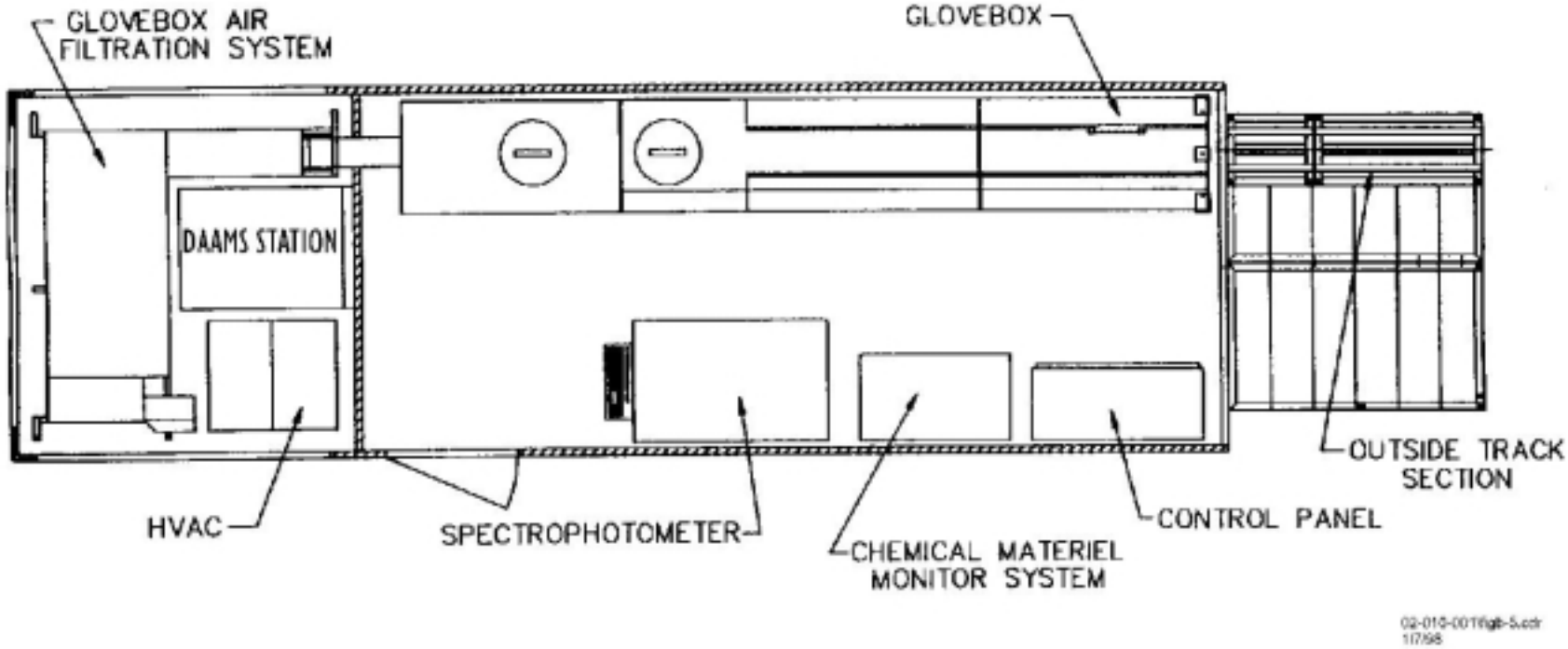

Figure 1-4
Side View of Rapid Response System Operations Trailer

Confirmation of the presence of hazardous material will be established through the use of the Depot Area Air Monitoring Systems (DAAMS) and colorimetric tubes. DAAMS will continuously sample air passing through an adsorbent-filled tube. Sequencers in the DAAMS sampling stations will permit collecting samples over discrete, preset time periods. The tubes will be collected daily and analyzed in the MASP using GC. DAAMS will be used for confirming the presence of chemical agents. Colorimetric tubes will be used to confirm the presence of the industrial chemicals CK, CG, PS, and chloroform. DAAMS may also be used for historical purposes to verify and document the absence of detectable levels of agent.

Instrumentation and Controls. Measurements taken during the Rapid Response System tests at Deseret Chemical Depot will help confirm that the process is proceeding normally and that engineering controls are effective. Reactor temperatures and pressure data will be recorded during the test to document reactor performance. Reaction observations will also be collected by the glovebox operators on operating data sheets. Differential pressure will be measured between the glovebox system and the crew space to ensure that negative pressure is maintained. An alarm will sound if negative pressure falls below the 0.25 inch water column setpoint. Differential pressure will be measured across both HEPA filters to ensure that the filters are not clogged or damaged. Attachment 2 provides additional detail.

Table 1-1.
RRS Industrial Chemical and Chemical Agent
Permissible Exposure Limits

Name	Abbreviation	Classification	Workplace Exposure Limit[a]
Adamsite	DM	Industrial chemical	Not specified (solid)
alpha-Chloroacetophenone	CN	Industrial chemical	0.32 mg/m^3
Chloroform	$CHCl_3$	Industrial chemical	9.7 $mg/m^{3b,c}$
Chloropicrin	PS	Industrial chemical	0.7 mg/m^{3c}
Cyanogen chloride	CK	Industrial chemical	0.6 $mg/m^{3b,c}$
GA simulant	--	Mixture of industrial chemicals	No Standard
Lewisite	L	Chemical agent	0.003 mg/m^3
Mustard	H, HD	Chemical agent	0.003 mg/m^3
Nitrogen mustard - 1	HN-1	Chemical agent	0.003 mg/m^3
Nitrogen mustard - 3	HN-3	Chemical agent	0.003 mg/m^3
Phosgene	CG	Industrial chemical	0.4 mg/m^3
Triphosgene	--	Industrial chemical	Not specified (solid)

Notes:
[a] Values for the workplace exposure limit cited from the USACMDA Site Monitoring Concept Plan, July 1994, Rev. 0.
[b] This is also the short-term exposure limit (STEL) for chloroform.
[c] NIOSH, June 1994

Air flowing through the carbon filters will be sampled to detect breakthrough of chloroform, chemical agent, or industrial chemicals. Air within the operations trailer crew space will be monitored to ensure that chemical agent, industrial chemicals, and chloroform levels are below permissible exposure levels. Alarms will sound if chemical agent, chloroform, or selected industrial chemicals are detected above the prescribed setpoint. The waste staging area of Building 4553 will be monitored for chloroform. All materials removed from the glovebox will be monitored using MINICAMS® to ensure that agent levels are below their PEL of 0.003 mg/m^3. In addition, samples of treatment residues will be analyzed for chemical agent in an onsite laboratory to confirm that the concentration of chemical agent present is below accepted standards.

Other system components will be used to support CAIS processing. These will include the PIG loading system; heating, ventilation, and air-conditioning system; and the utility trailer with power generation equipment. These are described in Attachment 2.